

Newport, 5 inches. *Tennessee*: Ashwood, 2½ inches; Nashville, 2 inches; Memphis, 4 inches; Chattanooga, 1 inch. *Texas*: Henrietta, 1½ inches; Denison, trace. *Utah*: Coalville, 4 inches; Salt Lake City, 1 to 3 inches. *Vermont*: Newport, 3 inches; Strafford and Woodstock, 6 inches; Burlington, ½ inch. *Virginia*: Accotink and Wytheville, 5 inches; Lynchburg, 3½ inches. *Washington Territory*: Dayton, 3 inches; Olympia, 2 inches. *West Virginia*: Morgantown and Wellsburg, 5 inches; Helvetia, 4 inches; Flemington, 2 inches. *Wisconsin*: Neillsville, 7 inches; Embarrass, 5 inches; La Crosse, 3½ inches; Madison, trace.

Rain or Snow from a Cloudless Sky.—Burlington, Vt., 2d, 4th, light snow; 22d, light snow at intervals during the day and night. Mobile, 10th, 7.45 p. m., light rain, lasting about five minutes, during which 0.01 inch fell. Buffalo, 22d, light snow. Dubuque, Ia., 2d, light snow from 8.05 to 8.25 a. m.; Ardenia, N. Y., 24th, between 4 and 5 p. m.

Hail.—Portland, Or., 25th; San Francisco, 24th, during a heavy shower of rain at 3.40 p. m., hail was reported to have fallen in several sections of the city. Sacramento, Cal., 31st. Red Bluff, Cal., 23d, hail-stones size of peas; 25th, from 5.10 to 5.15 p. m., size of peas; Visalia, Cal., 10th, 6 p. m., a sudden and heavy fall of hail lasting 10 minutes; Fort Canby, Wash. Ty., 31st.

Sleet.—The dates on which sleet fell in the various districts are as follows: New England, 1st, 6th, 8th to 11th, 13th, 16th, 26th, 27th; Middle Atlantic States, 4th, 5th, 8th to 12th, 16th to 19th, 22nd, 25th, 26th, 28th, 31st; South Atlantic States, 1st, 25th, 26th, 30th, 31st; East Gulf States, 29th; West Gulf States, 16th, 17th, 18th, 29th; Rio Grande Valley, 17th; Ohio Valley and Tennessee, 3rd, 4th, 6th, 10th, 12th, 13th, 15th to 18th, 24th, 25th, 30th, 31st; Lower Lake Region, 6th, 10th, 12th, 21st, 25th; Upper Lake Region, 6th, 7th, 8th, 13th, 26th; Upper Mississippi Valley, 4th to 7th, 10th, 12th, 16th, 20th, 24th, 26th; Missouri Valley, 4th, 10th, 16th, 26th, 30th; Northern Slope, North Platte, 12th; Middle Slope, 10th, 12th, 16th, 20th, 24th, Southern Slope, 16th, 17th, 29th; Southern Plateau, Tucson, 16th; Middle Plateau, Pioche, 24th; Northern Plateau, Fort Missoula, Mont., 2nd, and Dayton, Wash. Ter., 25th.

RELATIVE HUMIDITY.

The percentage of mean relative humidity for the month ranges as follows: New England, from 68 to 77; Middle Atlantic States, 69 to 87; South Atlantic States, 70 to 87; Florida Peninsula, 76 to 79; East Gulf States, 75 to 84; West Gulf States, 71 to 90; Rio Grande Valley, 78 to 91; Ohio Valley and Tennessee, 73 to 83; Lower Lake Region, 71 to 86; Upper Lake Region, 70 to 87; Extreme Northwest, 66 to 95; Upper Mississippi Valley, 63 to 78; Missouri Valley, 64 to 72; Northern Slope, 56 to 75; Middle Slope, 47 to 74; Southern Slope, 48 to 81; Southern Plateau, 54 to 64; Middle Plateau, 53 to 72; Northern Plateau, 73 to 85; North Pacific Coast Region, 83 to 85; Middle Pacific Coast Region, 68 to 70; South Pacific Coast Region, 57 to 70. *High stations* report the following percentages not corrected for altitude: Santa Fe, 67.9; Denver, 56.8; Pike's Peak, 77.4; Mt. Washington, 86.1.

WINDS.

The prevailing winds during the month of January, 1882, at Signal Service stations, are shown on chart No. II, by arrows which fly with the wind. In the Middle Atlantic States and New England the winds are *northwesterly*; in the South Atlantic States, *southwesterly*; in the Gulf States and Florida Peninsula, *southerly*; in the Ohio Valley and Tennessee, *south-west to northwest*; in the Lake Region, *southwesterly*; in the Upper Mississippi and Lower Missouri Valleys and in the Red River of the North Valley, *southerly*; in the Northern Slope, *northwesterly*; in the Middle and Southern Slopes, *south to west*; in the Plateau Regions, *variable*; in the North Pacific Coast Region, *southerly* and in California, *northerly*.

Total Movements of the Air.—The following are the largest total movements at Signal Service stations: Mt. Washington,

28.892 miles; Pike's Peak, 19.172; New Shoreham, R. I., 13.733; Delaware Breakwater, 13.423; Thatcher's Island, Mass., 12.602; Sandy Hook, 11.955; Hatteras, 11.501; Kittyhawk, 11.436; Cape May, 11.310; Sandusky, 10.841; Rochester, 10.793; Buffalo, 10.651; Barnegat, 10.557; Grand Haven, 10.292; Indianola, 10.135; Ft. Shaw, Mont., 10.039; Cape Henry, Va., 9.879; Newport R. I., 9.612; Eastport, 9.386; Chincoteague, Va., 9.301; Portsmouth, N. C., 9.280; Oswego, 9.125; Champaign, Ill., 9.070; Milwaukee, 8.962; Macon, N. C., 8.960; Erie, 8.908; Huron, Dak., 8.829; Boston, 8.742; Cleveland, 8.609; Galveston, 8.597; Detroit, 8.536; Dodge City, 8.500; Cheyenne, 8.328; Ft. Elliott, Tex., 8.301; Burlington, Vt., 8.185; Port Huron, 8.160; Marquette, 8.134; Atlanta, 8.088; North Platte, 8.046; Ft. Assinnaboine, Mont., 8.040. The *smallest* are: La Mesilla, N. M., 1.221; Rio Grande, Tex., 1.236; Roseburg, Or., 1.762; Ft. Missoula, Mont., 1.800; Salt Lake City, 2.100; Florence, Ariz., 2.177; Lynchburg, 2.338; Silver City, N. M., 2.541; Tucson, Ariz., 2.812; Boise City, Idaho, 2.863.

High Winds.—The following are maximum velocities, with direction at time of occurrence, for the various dates on which 50 miles per hour was exceeded, on the summit of Mt. Washington; 100 miles, NW., 2d; 70, NW., 3d; 88, N., 4th; 68, S., 6th; 82, NW., 7th; 92, W., 8th; 100, NW., 9th; 80, NW., 10th; 100, NW., 11th; 88, NW., 12th; 100, W. and SW., 13th; 110, NW., 14th; 120, NW., 15th; 65, NW., 16th; 97, NW., 17th; 88, W., 18th; 60, NW., 19th; 60, NW., 20th; 60, SW., 21st; 120, NW., 22d; 88, NW., 23d; 96, NW., 24th; 67, NW., 25th; 65, NW., 26th; 126, NW., 27th; 72, SW., 28th; 120, NW., 29th; 116, NW., 30th; 58, NW., 31st. On the summit of Pike's Peak the following maximum velocities were reported: 62 miles, NW., 1st; 54 W. and NW., 5th; 50, SW., 6th; 50, NW., 21st; 54, SW., 24th; 52, W., 26th. Other stations reporting velocities of 50 miles per hour or over are as follows: Ft. Stevenson, Dak., 56, NW., 17th; Indianola, 53, N., 16th; Grand Haven, 50, NW., 26th; Sandusky, 51, W., 22d; Buffalo, 51, SW., 27th; Rochester, 56, W., 27th; Champaign, Ill., 52, W., 26th; Thatcher's Island, Mass., 52, NE., 2d, and 57, NW., 27th; New Shoreham, R. I., 50, N., 1st and 2d, and 55 NE., 31st; Sandy Hook, 54, E., 31st; Cape May, 54, NW., 14th, 63, W., 22d, and 52, NW., 29th; Delaware Breakwater, 52, NW., 22d and 29th; Cape Henry, Va., 52, NW., 1st.

Local Storms.—Most of the following storms attended the development and progress of low areas Nos. XII and XIII. The latter rapidly succeeded the former and pursued its general course, and the partial restoration of atmospheric equilibrium between the passage of the two storm centres caused sudden and violent westerly gales at many points in the northern districts. Ventura Co., Cal., 12th, very violent wind storm (said to be a tornado) occurred in the Ojai valley, destroying houses and barns and uprooting and breaking off the strongest trees. Wilmington, Cal., 12th, most terrible storm for many years, accompanied by a blinding fall of snow and sleet; several vessels dragged anchor in the harbor, and one of them became a total wreck. Oakland, Cal., 13th, heavy northerly gale, signs destroyed, fences blown down, trees uprooted, wind mills dismantled and several houses damaged. Martinsburg, N. Y., 26th, very violent wind storm, over 25 buildings more or less demolished. Lowville, N. Y., many buildings unroofed and some entirely demolished. Harrisburg, N. Y., 27th, barns unroofed. Greig, N. Y., 27th, barns and houses unroofed and other property damaged. Constableville, N. Y., 27th, barns unroofed, fences blown down and trees uprooted. High Market, N. Y., 27th, several buildings unroofed. San Diego, Cal., 12th, most remarkable storm since 1847, a period of 34 years; continuing for 38 hours, it gave the largest rainfall of any one storm in the month of January during the above period, and the largest but two of all the storms recorded. It was especially remarkable as being the coldest storm of which there is any record. On the morning of the 14th snow-flakes were observed, melting as fast as they fell, a phenomenon